

POSITION RELATED DIFFERENCES IN PHYSIOLOGICAL MEASURES OF COLLEGIATE RUGBY UNION PLAYERS

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Introduction

Position related differences have previously been identified in elite rugby union players however similar research into non-elite rugby union players is limited. The purpose of this study was to investigate the differences due to playing position in physiological measures of collegiate rugby union players.

Method

Sixteen male (mean \pm s; age: 21.4 ± 2.0 yrs, stature: 180.01 ± 4.8 cm, body mass: 91.03 ± 12.23 kg) collegiate rugby union players (backs, $n=8$; forwards, $n=8$) completed the phosphate recovery anaerobic capacity test (Jenkins and Raeburn, 2000) to determine repeated sprint ability. Subjects performed eight 35 m sprints (25 s recovery). Sprint time was measured using timing gates (New Test Powertimer, Finland). Peak lactate concentration (HL_{peak}) was determined 5 minutes post-exercise. Body fat percentage (%BF) and fat free mass (FFM) were assessed using bioelectrical impedance analysis (BodyStat, Bodycare, UK).

Results

Results showed that forwards were heavier than backs (100.21 ± 9.05 kg v 81.86 ± 6.80 kg, $P=0.000$), had higher %BF ($22.69 \pm 4.28\%$ v $16.44 \pm 1.91\%$, $P=0.008$), higher FFM (77.54 ± 4.50 kg v 68.06 ± 5.16 kg, $P=0.002$), higher mean sprint times (5.5 ± 0.15 s v 5.25 ± 0.21 s, $P=0.003$) and lower FI% ($9.74 \pm 1.71\%$ v $7.42 \pm$

1.68%, $P=0.01$), whereas there were no significant differences in $HL_{a_{peak}}$ (6.90 ± 1.98 mM v 6.09 ± 1.10 mM, $P = 0.33$) between the positions.

Discussion

Differences in body mass, lean mass and body fat % values have been previously reported for elite rugby union forwards and backs (Duthie et al. 2003). In this study, backs achieved faster mean sprint times which agrees with the findings of Deutsch et al. (2007) and forwards had higher FI% compared to backs which compares favourably with the findings of Jenkins and Reaburn (2000). Deutsch et al. (1998) showed differences in $HL_{a_{peak}}$ in forwards and backs during a rugby match (6.6 mM v 5.1 mM) and a similar trend was observed in this study despite the differences being non-significant. These results suggest that the position related differences in physiological measures previously noted in elite players also exist in collegiate rugby union players and hence emphasise the need for specialised training tailored to positional requirements in collegiate rugby union.

References

- Deutsch MU, Maw GJ, Jenkins D, Reaburn P. (1998). Heart rate, blood lactate and kinematic data of elite colts (under 19) rugby players during competition. *Journal of Sports Sciences*, 16, 561-570.
- Deutsch MU, Kearney GA, Rehrer NJ. (2007) Time - motion analysis of professional rugby union players during match-play. *Journal of Sports Sciences*, 25(4), 461-472.
- Duthie G, Pyne D, Hooper S. (2003). Applied physiology and game analysis of rugby union. *Sports Medicine*, 33, 973 –991.
- Jenkins D, Reaburn P. (2000). Protocol for the physiological assessment of rugby players. In C. Gore (Ed.), *Physiological testing for elite athletes*. Champaign, IL: Human Kinetics, pp. 327–333.